

REMARKS

The following remarks supplement those of October 12, 2011

The claims are 12 and 14 to 19.

The above amendment to the definition of benzotriazoles as “a benzotriazole having a hydrophilic group” is presented to clarify that benzotriazole per se is not intended.

Support for this amendment is evident e.g. from paragraphs [0075] and [0076] of the present specification.

Claims 12 to 16 and 20 have been rejected under 35 U.S.C.103(a) as unpatentable over JP 2002-180267 in view of Applicant's admitted prior art and WO 96/39549 A1.

Further, claims 17 to 19 have been rejected over the above art further in view of EP 0 892 084 A1.

As stated in the October 12, 2011 response, it is described on pages 7-10 of WO 96/39549 A1 that the acid is used in a water-soluble form, i.e. X in the formula denotes salt that forms a cation. In addition, the citation relates clearly to salts represented by the formulae: RCOOX and $\text{R}^1(\text{COOX})_n$.

On the other hand, the present method employs not a salt but rather a straight-chain fatty acid. Therefore, the present method requires an organic solvent for dissolving straight-chain fatty acid and benzotriazole having a hydrophilic group in water because the two materials are insoluble in water.

Furthermore, JP'267 relates to a treatment for preventing lead from being eluted from a lead-containing copper alloy. In fact there is no mention in JP'267 of preventing the elution of nickel. Amended claim 12 is directed towards a method for preventing elution of nickel from a water-contact instrument made of copper alloy and plated with a material containing nickel, clearly and unobviously differing from JP'267.

In paragraph [0005] of the present specification, JP'267 is discussed quite clearly as disclosing a technique for preventing lead elution. Then, in paragraph [0017] and with the aid of Figure 23, the deficiencies of JP'267 discussed.

The straight-chain fatty acid of amended claim 12 is thus insoluble in water, and the protective film-forming agent therefore requires an organic solvent for dissolving the protective

film-forming components in water. This feature is critical in the protective film formation, as seen in paragraphs [0146] and [0147] of the present application.

Firstly, the organic solvent of the protective film formation agent evaporates, leaving the water-insoluble acid crystals to form on the nickel coat surface in a mesh shape. The remaining aqueous benzotriazole having hydrophilic groups then fills the gaps between the acid crystals and, once the water has evaporated, the water-repellent portions of the benzotriazole and the straight-chain fatty acid form the outer surface of the protective film.

As explained in paragraph [0147], a protective film formed in this manner is very tough. Further, the protective film exhibits water repellency and does not dissolve in water. Typically the water moving through the water-contact instrument is drinking water and therefore it is important to ensure that any interaction between the water and the instrument is minimized. The protective film formed in the manner of amended claim 12 reduces the amount of nickel elution, as seen in the data presented throughout the specification.

This “two-step” film formation process necessarily arises from the use of a straight-chain fatty acid and an organic solvent. Therefore, JP’267 is unable to produce such a protective film due to its use of water-soluble organic acids (it cites, for example, oxalic, citric and malic acids).

In addition, the use of the water-soluble organic acids of JP’267 has the disadvantage that when the acid is mixed in an aqueous solution, the benzotriazole reacts directly with the acid in the aqueous solution. As a result the “protective film forming agent” of JP’267 – in this case benzotriazole – not only fails to fully carry out its function, but also simultaneously induces a supernatant and precipitate which adheres to the treated workpiece and induces unevenness and specks, thereby forming discoloration.

The effect of this difference, as described above, is that the method of amended claim 12 provides a tough protective film with a water repellent feature, which does not dissolve in water. This is particularly important in the technical field of the amended claim 12, where the water-contact instrument may typically be a tap transporting drinking water. The prevention of nickel elution into drinking water is a major health issue and the present invention therefore provides a large benefit.

The technical problem to be solved can therefore be regarded as providing a protective film forming agent to treat nickel or nickel alloy surfaces in contact with water (in water

systems) which is able to prevent the elution of nickel by forming a protective surface thereon, and wherein the protective surface does not dissolve in water.

Thus, an art-skilled person, starting with the disclosure of JP'267, would not arrive at the method of amended claim 12. Firstly, JP'267 relates to the prevention of lead elution and makes no reference to nickel elution. Secondly, the use of water-soluble organic acids in JP'267 actively teaches away from the subject-matter of the amended claim 12. The use of straight-chain fatty acids in the amended claim 12 requires an organic solvent, rendering this difference over the disclosure of JP'267 completely unobvious.

Attached herewith is an English translation of JP'267 (extract) which will assist in understanding the '267 teachings. Note especially the acids disclosed on page 2, lines 20 to 25.

The features of above amended claim 12 and claims dependent thereon are clearly not taught by the combined reference teachings.

Accordingly, the rejections on prior art are untenable and should be withdrawn.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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